

MSc Applied Social & Health Psychology

M7X01449: Applied Research, Ethics & Analysis

Example quantitative results write-up 2 (Multiple Regression)

Results

In total, 181 participants completed the Theory of Planned Behaviour questionnaire (TPB; Ajzen, 1991) that was adapted to measure attitudes, intentions, perceived behavioural control (PBC) and subjective norms towards sun-screen use. Of this sample, 21 participants were male, 160 were female, and ranged in age from 20 to 77 ($M = 47.66$, $SD = 13.59$). Eighty percent were married or living with a partner and the average number of children reported was 1.89 ($SD = 1.19$).

The means and standard deviations of the TPB constructs are presented in Table 1, with scores ranging from one to seven for each. Intention scores emerged as relatively average across the sample, however exhibited a higher standard deviation which suggests that there was a degree of discrepancy between those who intend to engage in sunscreen use and those who do not.

Table 1
Descriptive statistics for TPB constructs.

	<i>M</i>	<i>SD</i>	<i>N</i>
Intention	3.68	2.03	181
Attitudes	3.34	1.20	181
Subjective norms	2.66	1.36	181
Perceived behavioural control	4.58	.49	181

Inter-correlations between the main measures included in the analysis are presented in Table 2. As can be seen, intentions to engage in sunscreen use were significantly correlated

with two of the three TPB constructs, showing that strong intentions were associated with low perceptions of personal control ($r = -.30, p < .001$) and strong perceptions of social pressure ($r = .63, p < .001$). Associations between intentions and demographic variables were also examined, however none of these correlations were found to be significant.

Table 2
Inter-correlations between study variables

	2	3	4	5	6	7
1. Intention	-.09	-.30***	.63***	.01	.10	.02
2. Attitudes		.09	-.02	-.09	.04	-.03
3. PBC			-.39***	.14*	.31***	.02
4. Subjective norms				-.06	-.02	-.02
5. Gender					-.11	-.23**
6. Age						.26***
7. Number of children						

Note: * $p < .05$, ** $p < .005$, *** $p < .001$

A hierarchical multiple regression analysis was conducted to assess the ability of three constructs of the TPB (attitudes, subjective norms and Perceived Behavioural Control) to predict levels of intentions to engage in sunscreen use in a Welsh population after controlling for the influence of gender, age and number of children. The independent variables were therefore entered into the regression in two blocks; (i) gender, age and number of children, and (ii) attitudes, subjective norms and PBC.

Age, gender and number of children explained 0% of the variance in intention to use sunscreen scores (adjusted $r^2 = -.009$; $F(3,157) = .50, p > .05$), with none of the variables emerging as significant independent predictors (see Table 3). The addition of the three TPB variables in Step 2 significantly increased the prediction by 42.3% ($F \text{ change } (3,154) =$

38.19, $p < .001$) resulting in 41% explanation of the variance in intentions to use sunscreen scores being explained; $F(6,154) = 47.64$, $p < .001$.

Table 3

Hierarchical regression analysis for predicting intentions to use sun-screen

Step / predictor	Step 1	Step 2
1. Age	.01	.16*
Gender	.02	.07
Number of children	-.002	.005
2. Attitudes		-.07
Subjective norms		.59**
PBC		-.12

Note: * $p < .05$, ** $p < .001$

The addition of the TPB variables resulted in the Beta value for age to become significant ($\beta = .16$, $p < .05$) indicating that the effect of age on intention was mediated by the TPB variables. The remaining demographic variables (gender and number of children) did not make a significant unique contribution to predicting intention scores. Of the TPB constructs, subjective norms was the only variable to emerge as a significant unique predictor for intentions to use sunscreen ($\beta = .59$, $p < .001$), whilst PBC and attitudes were non-significant predictors.

In summary, subjective norms materialised as the strongest predictor variable with high levels of social pressures associated significantly with strong intentions towards using sunscreen. Age becomes a significant predictor with the addition of the TPB constructs, which may be explained through the significant positive correlation between age and PBC ($r = .31$, $p < .001$).

SPSS Output

Frequencies

Statistics				
		gender	Marital status	Education
N	Valid	181	170	167
	Missing	19	30	33
Mean		1.88	2.15	3.55
Std. Deviation		.321	.612	1.685
Minimum		1	1	1
Maximum		2	4	6

gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	21	10.5	11.6	11.6
	Female	160	80.0	88.4	100.0
	Total	181	90.5	100.0	
Missing	System	19	9.5		
Total		200	100.0		

Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	10	5.0	5.9	5.9
	Married/Living with partner	136	68.0	80.0	85.9
	Divorced/separated	13	6.5	7.6	93.5
	Widowed	11	5.5	6.5	100.0
	Total	170	85.0	100.0	
Missing	99	11	5.5		
	System	19	9.5		
	Total	30	15.0		
Total		200	100.0		

Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Left before 16	29	14.5	17.4	17.4
	Left at 16	29	14.5	17.4	34.7
	Left at 18	12	6.0	7.2	41.9
	College/Diploma	32	16.0	19.2	61.1
	University degree or higher	48	24.0	28.7	89.8
	Other	17	8.5	10.2	100.0
	Total	167	83.5	100.0	

99		14	7.0		
Missing	System	19	9.5		
	Total	33	16.5		
Total		200	100.0		

Descriptive Statistics

	Mean	Std. Deviation	N
Total Score Intentions	3.68	2.033	181
gender	1.88	.321	181
Age	47.66	13.592	161
Number of children	1.89	1.194	170
Total score PBC	4.58	.487	181
Total score SN	2.66	1.362	181
Total Score Attitudes	3.34	1.196	181

Correlations

		Total Score Intentions	gender	Age	Number of children	Total score PBC	Total score SN	Total Score Attitudes
Pearson Correlation	Total Score Intentions	1.000	.010	.095	.019	-.301	.632	-.090
	gender	.010	1.000	-.112	-.225	.138	-.056	-.092
	Age	.095	-.112	1.000	.263	.310	-.023	.040
	Number of children	.019	-.225	.263	1.000	.024	-.017	-.031
	Total score PBC	-.301	.138	.310	.024	1.000	-.390	.092
	Total score SN	.632	-.056	-.023	-.017	-.390	1.000	-.021
	Total Score Attitudes	-.090	-.092	.040	-.031	.092	-.021	1.000
Sig. (1-tailed)	Total Score Intentions	.	.446	.115	.402	.000	.000	.115
	gender	.446	.	.079	.002	.032	.229	.110
	Age	.115	.079	.	.000	.000	.385	.309
	Number of children	.402	.002	.000	.	.379	.413	.345
	Total score PBC	.000	.032	.000	.379	.	.000	.108
	Total score SN	.000	.229	.385	.413	.000	.	.387
	Total Score Attitudes	.115	.110	.309	.345	.108	.387	.
N	Total Score Intentions	181	181	161	170	181	181	181
	gender	181	181	161	170	181	181	181
	Age	161	161	161	161	161	161	161
	Number of children	170	170	161	170	170	170	170
	Total score PBC	181	181	161	170	181	181	181
	Total score SN	181	181	161	170	181	181	181
	Total Score Attitudes	181	181	161	170	181	181	181

Regression

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Number of children, gender , Age ^b	.	Enter
2	Total score SN, Total Score Attitudes, Total score PBC ^b	.	Enter

a. Dependent Variable: Total Score Intentions

b. All requested variables entered.

Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.097 ^a	.009	-.009	2.043	.009	.501	3	157	.682
2	.657 ^b	.432	.410	1.562	.423	38.185	3	154	.000

a. Predictors: (Constant), Number of children, gender , Age

b. Predictors: (Constant), Number of children, gender , Age, Total score SN, Total Score Attitudes, Total score PBC

c. Dependent Variable: Total Score Intentions

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.273	3	2.091	.501	.682 ^b
	Residual	655.343	157	4.174		
	Total	661.616	160			
2	Regression	285.816	6	47.636	19.521	.000 ^c
	Residual	375.800	154	2.440		
	Total	661.616	160			

a. Dependent Variable: Total Score Intentions

b. Predictors: (Constant), Number of children, gender , Age

c. Predictors: (Constant), Number of children, gender , Age, Total score SN, Total Score

Attitudes, Total score PBC

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlation	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial
1	(Constant)	2.737	1.220		2.244	.026	.328	5.146		
	gender	.131	.517	.021	.253	.800	-.890	1.152	.010	
	Age	.015	.012	.098	1.187	.237	-.010	.039	.095	
	Number of children	-.003	.143	-.002	-.023	.982	-.286	.280	.019	
2	(Constant)	2.069	1.566		1.321	.188	-1.025	5.163		
	gender	.461	.404	.073	1.141	.256	-.337	1.260	.010	
	Age	.023	.010	.157	2.331	.021	.004	.043	.095	
	Number of children	.009	.110	.005	.083	.934	-.208	.226	.019	

Total score PBC	-.518	.298	-.124	-1.742	.084	-1.106	.070	-.301	-
Total score SN	.881	.099	.590	8.882	.000	.685	1.077	.632	-
Total Score Attitudes	-.110	.104	-.065	-1.058	.292	-.317	.096	-.090	-

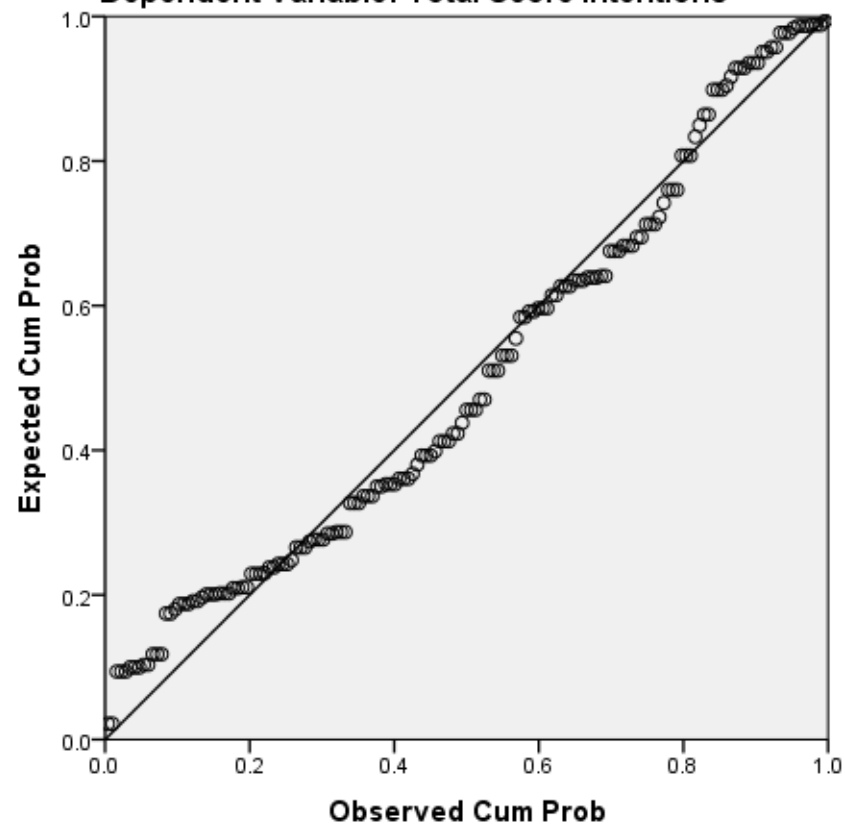
a. Dependent Variable: Total Score Intentions

Collinearity Diagnostics ^a										
Model	Dimension	Eigenvalue	Condition Index	Variance Proportions						
				(Constant)	gender	Age	Number of children	Total score PBC	Total score SN	Total Score Attitudes
1	1	3.705	1.000	.00	.00	.00	.02			
	2	.227	4.039	.01	.02	.01	.84			
	3	.057	8.068	.02	.11	.85	.08			
	4	.011	18.376	.98	.87	.14	.06			
2	1	6.372	1.000	.00	.00	.00	.00	.00	.00	.00
	2	.269	4.867	.00	.00	.00	.73	.00	.09	.01
	3	.189	5.804	.00	.00	.01	.08	.00	.65	.07
	4	.095	8.192	.00	.03	.07	.04	.00	.02	.81
	5	.057	10.601	.00	.11	.72	.08	.00	.01	.02
	6	.014	21.326	.07	.81	.17	.04	.19	.00	.08
	7	.004	40.054	.92	.05	.02	.02	.80	.23	.01

a. Dependent Variable: Total Score Intentions

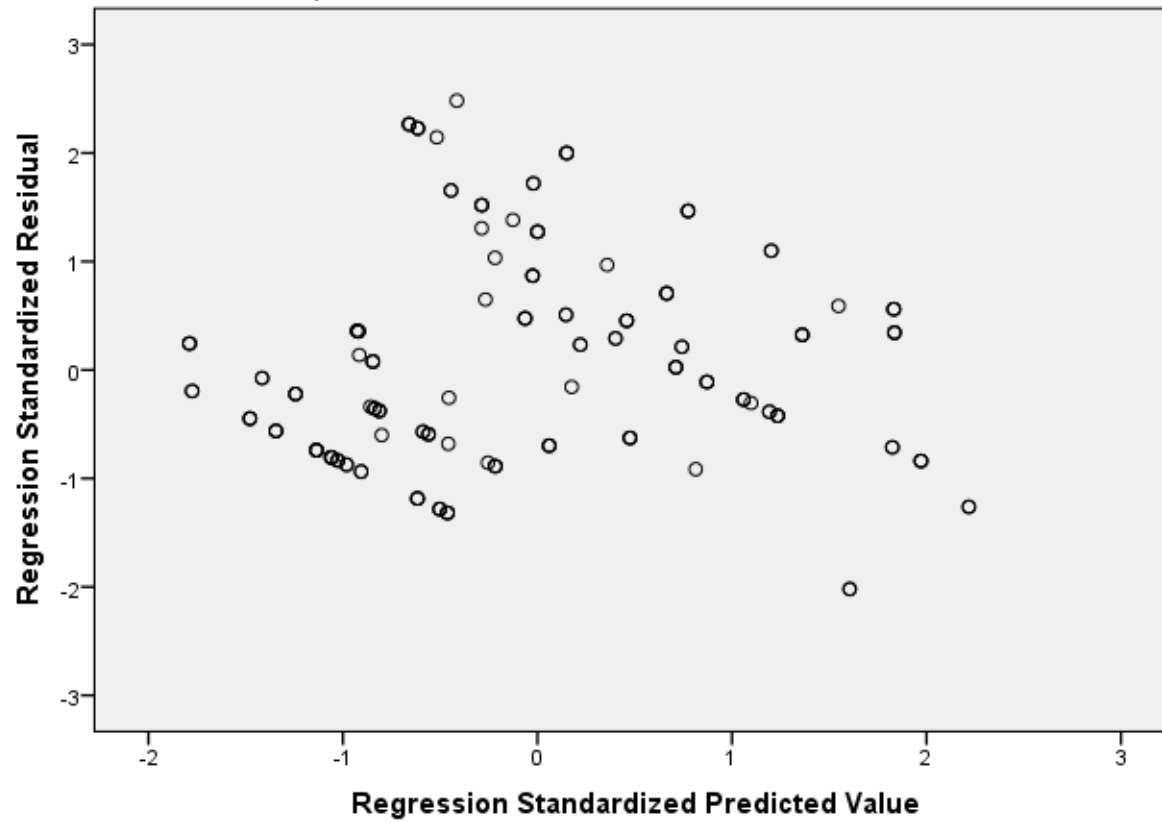
Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Total Score Intentions



Scatterplot

Dependent Variable: Total Score Intentions



*AREA MR quant write-up (1).sav [DataSet1] - IBM SPSS Statistics Data Editor														
File Edit View Data Transform Analyze Direct Marketing Graphs Utilities Add-ons Window Help														
	id	gender	Age	Marital	Educ	Children	TotalPBC	TotalSN	TotalAttitudes	TotalIntention	MAH_1	COO_1	var	var
1	1	2	28	2	2	2	5	2	5	6	4.08410	.02482		
2	2	2	35	2	5	1	5	4	5	7	4.69924	.01174		
3	3	1	99	2	2	4	4	5	5	3	.	.		
4	4	2	99	99	99	99	5	2	2	1	.	.		
5	5	2	47	2	2	2	5	2	3	1	.86393	.00238		
6	6	1	99	99	99	99	3	5	2	5	.	.		
7	7	2	22	2	6	0	4	4	3	5	7.34498	.00061		
8	8	2	53	2	5	1	5	6	3	5	9.07162	.00720		
9	9	1	37	2	6	2	5	1	4	2	12.41177	.00085		
10	10	2	59	3	99	2	5	2	2	1	2.17295	.00484		
11	11	2	30	2	3	3	5	1	1	1	9.17322	.00327		
12	12	2	57	2	4	3	5	1	2	3	4.47884	.00066		
13	13	1	73	2	5	2	5	2	3	6	12.03387	.03184		
14	14	2	42	2	4	1	5	1	5	1	4.68139	.00109		
15	15	2	46	2	5	2	4	3	1	5	5.08690	.00007		
16	16	2	39	2	4	0	5	2	4	2	4.21957	.00071		
17	17	2	49	2	1	3	4	4	2	6	3.53993	.00045		
18	18	2	41	2	2	0	4	3	3	5	2.83889	.00075		
19	19	2	69	2	1	3	5	3	3	5	3.89627	.00000		
20	20	2	71	4	4	3	5	3	4	6	4.78188	.00277		
21	21	2	77	4	1	2	5	4	4	5	6.68703	.00135		
22	22	2	63	2	1	3	5	2	3	3	2.28753	.00149		
23	23	2	43	1	5	3	5	3	4	2	2.83383	.00282		
24	24	2	51	2	2	0	5	3	3	4	3.65808	.00100		
25	25	2	42	2	3	1	4	1	4	3	9.64410	.00007		
26	26	2	50	2	5	1	5	3	3	5	1.98814	.00209		
27	27	2	99	2	1	1	4	3	4	4	.	.		
28	28	2	39	2	4	0	5	2	4	2	3.16845	.00050		
29	29	2	66	1	2	1	5	1	3	2	4.78505	.00196		
30	30	2	48	3	5	1	5	2	4	6	1.57502	.01176		
31	31	1	47	2	6	3	4	1	5	2	11.30998	.00063		
32	32	2	67	4	4	3	5	2	2	7	5.08962	.02348		
33	33	2	37	2	5	2	4	3	5	6	4.40428	.00838		
34	34	2	64	2	1	1	5	1	4	1	4.81044	.00389		
35	35	2	99	2	2	4	4	2	1	5	.	.		
36	36	1	47	2	4	3	4	4	3	3	8.54905	.00377		
37	37	2	47	2	5	2	4	5	4	7	6.70169	.00090		
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